

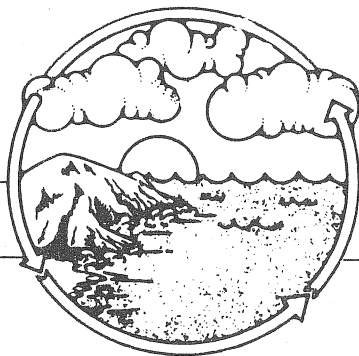
PROCEEDINGS OF THE THIRTEENTH ANNUAL PACIFIC CLIMATE (PACLIM) WORKSHOP

Asilomar, California — April 14-17, 1996

Edited by
Caroline M. Isaacs and Vera L. Tharp

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for the
Sacramento-San Joaquin Estuary

PACLIM



**Climate Variability
of the
Eastern North Pacific
and
Western North America**

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The Thirteenth Annual Pacific Climate Workshop is sponsored by:

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Information generated by the PACLIM Workshop provides the Interagency Program with a
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Views and conclusions contained in this publication do not necessarily reflect the opinions of the
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STATEMENT OF PURPOSE

Pacific Climate (PACLIM) Workshops

In 1984, a workshop was held on "Climatic Variability of the Eastern North Pacific and Western North America". From it has emerged an annual series of workshops held at the Asilomar Conference Center, Monterey Peninsula, California. These annual meetings, which involve 80-100 participants, have come to be known as PACLIM (Pacific Climate) Workshops, reflecting broad interests in the climatologies associated with the Pacific Ocean and western Americas in both the northern and southern hemispheres. Participants have included atmospheric scientists, hydrologists, glaciologists, oceanographers, limnologists, and both marine and terrestrial biologists. A major goal of PACLIM is to provide a forum for exploring the insights and perspectives of each of these many disciplines and for understanding the critical linkages between them.

PACLIM arose from growing concern about climate variability and its societal and ecological impacts. Storm frequency, snowpack, droughts and floods, agricultural production, water supply, glacial advances, stream chemistry, sea surface temperature, salmon catch, lake ecosystems, and wildlife habitat are among the many aspects of climate and climatic impacts addressed by PACLIM Workshops. Workshops also address broad concerns about the impact of possible climate change over the next century. From observed changes in the historical record, the conclusion is evident that climate change would have large societal impacts through effects on global ecology, hydrology, geology, and oceanography.

Our ability to predict climate, climate variability, and climate change critically depends on an understanding of global processes. Human impacts are primarily terrestrial in nature, but the major forcing processes are atmospheric and oceanic in origin and transferred through geologic and biologic systems. Our understanding of the global climate system and its relationship to ecosystems in the Eastern Pacific area arises from regional study of its components in the Pacific Ocean and western Americas, where ocean/atmosphere coupling is strongly expressed. Empirical evidence suggests that large-scale climatic fluctuations force large-scale ecosystem response in the California Current and in a very different system, the North Pacific central gyre. With such diverse meteorologic phenomena as the El Niño-Southern Oscillation and shifts in the Aleutian Low and North Pacific High, the Eastern Pacific has tremendous global influences and particularly strong effects on North America. In the western United States, where rainfall is primarily a cool-season phenomenon, year-to-year changes in the activity and tracking of North Pacific winter storms have substantial influence on the hydrological balance. This region is rich in climatic records, both instrumental and proxy. Recent research efforts are beginning to focus on better paleoclimatic reconstructions that will put present-day climatic variability in context and allow better anticipation of future variations and changes.

The PACLIM Workshops address the problem of defining regional coupling of multifold elements, as organized by global phenomena. Because climate expresses itself throughout the natural system, our activity has been, from the beginning, multidisciplinary in scope. The specialized knowledge from different disciplines has brought together climatic records and process measurements to synthesize an understanding of the complete system. Our interdisciplinary group uses diverse time series, measured both directly and through proxy indicators, to study past climatic conditions and current processes in this region. Characterizing and linking the geosphere, biosphere, and hydrosphere in this region provides a scientific analogue and, hence, a basis for understanding similar linkages in other regions, as well as for anticipating the response to future climate variations. Our emphasis in PACLIM is to study the interrelationships among diverse data. To understand these interactive phenomena, we incorporate studies that consider a broad range of topics both physical and biological, time scales from months to millennia, and space scales from single sites to the entire globe.

An overview of the PACLIM Workshops was published in the December 30, 1986, issue of *EOS*.
Proceedings of PACLIM Workshops are published annually by the
California Department of Water Resources as Technical Reports of the
Interagency Ecological Program for the Sacramento-San Joaquin Estuary.
A multi-disciplinary collection of research papers, spawned at least partially by interactions in the
initial PACLIM Workshops, was published as *AGU Geophysical Monograph 55* (Peterson, ed., 1989).